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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/825,087	04/02/2001	Cem Basceri	MI22-1483	1701

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EXAMINER

TALBOT, BRIAN K

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 06/23/2003

11

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/825,087

Applicant(s)

BASCERI ET AL.

Examiner

Brian K Talbot

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 20 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 40-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 40-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 10.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/20/03 has been entered.

2. Claims 55-58 have been added. Claims 1-21 and 40-58 remain in the application.

***Claim Rejections - 35 USC § 103***

3. Claims 1-21 and 40-58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suntola et al. (4,058,430) (a) alone or (b) in combination with Yu et al. (6,241,821 B1) or Marscher (4,109,031).

Suntola et al. (4,058,430) teaches forming a compound film whereby a substrate is subjected to a vapor of a first element at a temperature to form a single atomic layer thereon, then a vapor of a second element is introduced to form a second atomic layer atop the first atomic layer. This is repeated until a desired thickness is achieved and then the layers are heated to form the compound film (see abstract and col. 6 - col. 7). Suntola et al. (4,058,430) teaches partial coverage can be achieved of the first element on the substrate and then forming the second element (col. 9, lines 20-60 and claim 7).

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Suntola et al. (4,058,430) fails to teach forming a first element layer and a second element layer surrounding or sandwiching the compound layer (interlayer).

(a) While the Examiner acknowledges the fact that the reference is silent upon forming the compound layer between two layers, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving similar results regardless of whether or not the compound layer was formed on a substrate or on a deposited film.

(b) Yu et al. (6,241,821 B1) teaches forming single atomic layer interface layers between two layers. The interface layer can be comprised of Si, O, and a metal. A layer of BaO or SrO can be applied to a substrate prior to the interface layer being applied thereto and a subsequent layer can be applied to the interface layer. The interface layer is applied by chemisorption. (col. 2, line 15 – col. 4, line 40). *— setup layer*

Marscher (4,109,031) teaches forming gradient layer between metal and ceramic layers which are comprised of 100% metal adjacent the metal to 100% ceramic with variations throughout the interlayer with an increase in ceramic material the more further away from the metal (col. 1, lines 10-30 and col. 2, lines 22-60). While the Examiner acknowledges the fact that Marscher (4,109,031) does not disclose chemisorption for the depositing layers, it is the Examiner's position that the use of gradient layer between different materials to alleviate the differences in thermal expansion/stresses upon subsequent heating would be achieved regardless of what technique was utilized to form the layers. In addition, some of the claims recite the first material being metal (Pt or Ru) and the second material being a metal oxide (TaO or titanates) which are similar to the materials disclosed in Marscher (4,109,031). *— Thermal Difference*

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Therefore, it would have been obvious at the time the invention was made to have modified Suntola et al. (4,058,430) process by performing the chemisorption layer between layers as evidenced by Yu et al. (6,241,821 B1) because of the expectation of achieving similar success.

***Response to Amendment***

4. Applicant's arguments filed 15/20/03 have been fully considered but they are not persuasive.

Applicant argued that while the Examiner has taken the position that gradient layers are conventional in the art, the prior art fails to teach varying the materials within the gradient layer.

Marscher (4,109,031) teaches such variation of materials for forming the interface layer between a metal and a ceramic layer.

Applicant argued that the references fail to teach the claim materials.


The Examiner agrees in part. While the references teach various materials, Suntola teaches a process for forming atomic layers for almost the entire Periodic table (see pg. 6, lines 9-30). In addition, Marscher (4,109,031) teaches metals and metal oxides which are similar to what is claimed. Hence, it is the Examiner's position that one skilled in the art at the time the invention was made would have had a reasonable expectation of achieving success with the claimed materials.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian K Talbot whose telephone number is (703) 305-3775. The examiner can normally be reached on Tuesday-Friday 6AM-4PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3775.

  
Brian K Talbot  
Primary Examiner  
Art Unit 1762

BKT  
June 18, 2003